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(FILE 'HOME' ENTERED AT 08:29:22 ON 15 MAR 2008)  
FILE 'CA' ENTERED AT 08:29:32 ON 15 MAR 2008  
E SCHAFFER E/AU  
L1 65 S E3,E22  
E SCHAEFER E/AU  
L2 100 S E3,E18  
E WINNEWISSER M/AU  
L3 232 S E3-4  
L4 120 S L1-3 AND(MICROWAVE OR TERAHERTZ OR THZ OR TERAHZ OR THERTZ OR  
(TERA OR T)(W)(HERTZ OR HZ) OR SUBMILLIMETER OR SUB MILLIMETER OR  
SUBMM OR SUB MM OR MICRON OR MICROMETER)  
L5 74 S L4 AND(ONLINE OR LINE OR FREQUENCY OR STABIL? OR FREE)  
L6 1 S L4 AND 1980/PY AND CHEM?/SO  
L7 1 S L4 AND 1974/PY AND NATUR?/SO  
L8 1 S L4 AND 1971/PY AND ANGEW?/SO  
L9 1 S L4 AND 1983/PY AND SPECTRO?/SO  
L10 2 S L4 AND 1981/PY AND PHYS?/SO  
L11 1 S L4 AND 1982/PY AND PHYS?/SO  
L12 1 S L4 AND 1983/PY AND STRUCT?/SO  
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TERAHERTZ OR THZ OR TERAHZ OR THERTZ OR (TERA OR T)(W)(HERTZ OR HZ)  
OR SUBMILLIMETER OR SUB MILLIMETER OR SUBMM OR SUB MM OR MICRON OR  
MICROMETER)  
L15 35 S L14 AND DATA(2A)(AQUISITION OR AQUIR? OR ACQUISITION OR ACQUIR?)  
L16 33 S L14 AND(SCHOTTK? OR DETECT?)(2A)DIODE  
L17 22 S L14 AND(FREQUENCY OR TIME)(3A)(MARKER OR MARKING OR CALIBRAT? OR  
REFERENC?)  
L18 10 S L14 AND FREQUENCY(4A)SWEEP?  
L19 159 S L14 AND (SOLID STATE OR COMPACT OR PORTABLE OR MINIATUR?/TI,IT,ST  
OR (OSCILLATOR/TI,ST,IT NOT(BACKWARD WAVE OR BWO)))  
L20 299 S L6-13,L15-19  
L21 226 S L20 AND PY<2003  
FILE 'INSPEC' ENTERED AT 09:15:17 ON 15 MAR 2008  
L22 96 S L17  
L23 74 S L22 AND PY<2003  
FILE 'CA, INSPEC' ENTERED AT 09:18:26 ON 15 MAR 2008  
L24 293 DUP REM L21 L23 (7 DUPLICATES REMOVED)

=> d bib,ab 124 1-293

L24 ANSWER 26 OF 293 CA COPYRIGHT 2008 ACS on STN  
AN 133:112177 CA  
TI Tunable terahertz-wave parametric oscillators using LiNbO3 and  
MgO:LiNbO3 crystals  
AU Shikata, Jun-Ichi; Kawase, Kodo; Karino, Ken-Ichi; Taniuchi, Tetsuo;  
Ito, Hiromasa  
CS Research Institute of Electrical Communication, Tohoku University,  
Sendai, 980-8577, Jordan  
SO IEEE Transactions on Microwave Theory and Techniques (2000), 48(4, Pt.  
2), 653-661

AB Coherent tunable terahertz waves were generated successfully using a terahertz-wave parametric oscillator (TPO) based on laser light scattering from the A1-symmetry polariton mode of LiNbO3. This method has several advantages, such as continuous and wide tunability (frequency: 0.9–3.1 THz), a relatively high peak power (more than a few milliwatts), and compactness of its system (tabletop size). The system simply requires a fixed-wavelength pump source, and it is easy to tune. This paper deals with the general performance of this terahertz-wave source using the prism output-coupler method as well as the development and applications of the system. Its tunability, coherency, power, and polarization were measured, and this tunable source was used for terahertz spectroscopy to measure the absorption spectra of LiNbO3 and H2O vapor. Also, the use of MgO-doped LiNbO3 (MgO:LiNbO3) in the authors' terahertz regime, as well as its far-IR properties, is described. The MgO:LiNbO3 TPO is almost five times more efficient than the undoped LiNbO3 TPO, and the enhancement mechanism originates from the enhanced scattering cross section of the lowest A1-symmetry mode in a spontaneous Raman exptl.

L24 ANSWER 30 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 133:65744 CA

TI A three-diode-laser, terahertz-difference-frequency synthesizer and its applications toward far-infrared spectroscopy of ammonia and water  
AU Chen, Pin; Pearson, John C.; Pickett, Herbert M.; Matsuura, Shuji; Blake, Geoffrey A.

CS Time and Frequency Division, National Institute of Standards and Technology, Boulder, CO, 80303, USA

SO OSA Trends in Optics and Photonics Series (2000), 31(Advanced Semiconductor Lasers and Their Applications), 103–105

AB A solid-state, high-resoln., frequency-calibrated THz spectrometer is presented based on the THz optical heterodyne conversion (TOHC) in low-temp.-grown GaAs using distributed Bragg reflector lasers. The exptl. setup is depicted and described. Spectroscopical investigations were carried out with such a spectrometer for 14NH3 in the  $v_2 = 1$  state and for H216O in the ground and the  $v_2 = 1$  state. Twenty-six  $\psi_2$ -NH3 pure inversion and inversion-rotation transitions were measured with a 20 times higher accuracy than for previously published values. Six rotational transitions of H2O were measured in the ground state and 11 ones in the  $v_2$  state.

L24 ANSWER 37 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 131:176485 CA

TI Improving the power and spectral performance of a 27–33 THz AgGaS2 difference-frequency spectrometer

AU Kaing, T.; Zondy, Jean-Jacques; Yelisseyev, A. P.; Lobanov, S. I.; Isaenko, Ludmila I.

CS Laboratoire Primaire du Temps et des Fréquences, Bureau National de Métrologie/Observatoire de Paris, Paris, F-75 014, Fr.

SO IEEE Transactions on Instrumentation and Measurement (1999), 48(2), 592–595

AB Progress toward the achievement of a compact, subkilohertz resoln.

difference-frequency spectrometer to probe narrow satd. mol. transitions in the 9-11  $\mu\text{m}$  range is reported. The spectrometer, presently generating 40 nW of IR (IR) power [8], uses a type-I cut AgGaS<sub>2</sub> crystal located in a dual-cavity resonator design. A frequency-stabilized all-diode-laser radiation setup was implemented to obtain the required mid-IR spectral purity and frequency tuning range. Further exptl. investigations show that a type-II phase-matched AgGaS<sub>2</sub> crystal or a walk-off-compensated, two-crystal device would yield at least two times larger conversion efficiency than type-I cut samples. These improvements should help to reach the goal of the microwatt-level output for the IR radiation.

L24 ANSWER 53 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 129:128727 CA

TI Optical pump-terahertz probe spectroscopy utilizing a cavity-dumped oscillator-driven terahertz spectrometer

AU Flanders, Bret N.; Arnett, David C.; Scherer, Norbert F.

CS Department of Chemistry and the James Franck Institute, University of Chicago, Chicago, IL, 60637, USA

SO IEEE Journal of Selected Topics in Quantum Electronics (1998), 4(2), 353-359

AB A terahertz spectrometer capable of steady-state and time-resolved, measurements over the 0.1-3.5-THz spectral region was built. This spectrometer routinely produces and detects terahertz pulses that exhibit signal-to-noise ratios (SNR's) >6000 in the time domain and a spectral noise floor of magnitude  $2.7 \times 10^{-4}$ . Hence, the spectrometer achieves nearly four decades of dynamic range in the frequency domain. Two pulse generation processes give rise to the measured terahertz pulse. High-quality optical pump-terahertz probe data on (111) GaAs samples are presented, demonstrating the applicability of this spectrometer to the study of optically induced dynamical processes. Non-Drude relaxation behavior is obsd. in the transient terahertz spectra.

L24 ANSWER 126 OF 293 INSPEC (C) 2008 IET on STN

AN 1992:4250489 INSPEC DN A1992-22-0765-001; C1992-11-7320-040

TI The automatized millimeter wave spectrometer

AU Alekseev, E.A. (Inst. of Radioastron., Acad. of Sci. of the Ukraine, Kharkov, Ukraine)

SO Proceedings of the SPIE - The International Society for Optical Engineering (1992), vol.1811, p. 408-9, 0 refs.

AB An automated millimeter wave spectrometer intended for detailed investigation of molecular spectra has been built. The computer controlled millimeter band frequency synthesizer having capacity for range extension to the submillimeter region is the heart of the spectrometer. The frequency synthesis in millimeter band is achieved by means of two-step frequency multiplication of the reference frequency synthesizer output (390-400 MHz) in phase-locked loops. For phase noise spectrum enhancement a F/G-band klystron oscillator is used. To operate in the short-wave region of millimeter band the system is equipped with a frequency multiplier

L24 ANSWER 197 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 97:190603 CA

OREF 97:31723a,31726a

TI The rotation-inversion spectrum of isocyanamide, H<sub>2</sub>NNC, in the millimeter wave region

AU Schaefer, Eckhard; Winnewisser, Manfred

CS Phys. Chem. Inst., Justus-Liebig-Univ. Giessen, Giessen, D-6300, Fed. Rep. Ger.

SO Berichte der Bunsen-Gesellschaft (1982), 86(9), 780-90

AB The rotation-inversion spectrum of isocyanamide, was investigated in the frequency range 100-400 GHz. Owing to the near C<sub>2v</sub> symmetry of the inverting mol., 2 types of dipole transitions were obsd.: (1) intrasystem a-type transitions and (2) intersystem or rotation-inversion c-type transitions connecting the 2 energy manifolds of H<sub>2</sub>NNC belonging to the inversion states O<sup>+</sup> and O<sup>-</sup>, resp. The inversion splitting is 0.369 cm<sup>-1</sup>, indicative of a high barrier to inversion. Pure inversion transitions are not allowed. The rotation-inversion anal. was carried out for 240 a-type and c-type transitions using S-reduced Hamiltonians according to J.K.G. Watson (1977) for the O<sup>+</sup> and O<sup>-</sup> inversion states sepd. by the inversion splitting E<sub>inv</sub>. Spectroscopic consts. and centrifugal distortion consts. were obtained for both states. The present data and their anal. provide an excellent basis for a radioastronomical search for H<sub>2</sub>NNC.

L24 ANSWER 217 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 93:83942 CA

OREF 93:13357a,13360a

TI Millimeter wave spectrum of barium sulfide in a low-pressure flame. Current millimeter wave measurements of high-temperature species

AU Helms, David A.; Winnewisser, Manfred; Winnewisser, Gisbert

CS Phys.-Chem. Inst., Justus-Liebig-Univ., Giessen, D-6300, Fed. Rep. Ger.

SO Journal of Physical Chemistry (1980), 84(14), 1758-65

AB The millimeter wave spectra of 6 isotopic species of BaS were obtained in a chemiluminescent flame by the reaction Ba + OCs = BaS + CO entrained in Ar gas. The 6 isotopic species <sup>134</sup>Ba<sup>32</sup>S, <sup>135</sup>Ba<sup>32</sup>S, <sup>136</sup>Ba<sup>32</sup>S, <sup>137</sup>Ba<sup>32</sup>S, <sup>138</sup>Ba<sup>32</sup>S, and <sup>138</sup>Ba<sup>34</sup>S were measured and analyzed in the vibrational and electronic X<sup>1</sup>Σ<sup>g</sup> ground state in the 70-GHz region. Data on the first excited vibrational states of the <sup>135</sup>Ba<sup>32</sup>S, <sup>136</sup>Ba<sup>32</sup>S, <sup>137</sup>Ba<sup>32</sup>S, and <sup>138</sup>Ba<sup>32</sup>S species were also obtained. From these measurements the Dunham consts. y<sub>01</sub>, y<sub>02</sub>, y<sub>11</sub>, y<sub>12</sub>, and y<sub>21</sub> have been detd. The internuclear distance of BaS has been reevaluated: re(BaS) = 2.5073184(15) Å.

L24 ANSWER 253 OF 293 INSPEC (C) 2008 IET on STN

AN 1975:797152 INSPEC DN A1975-052523; B1975-030514; C1975-018910

TI Increasing the resolving power of a submillimeter radiospectroscope with a backward wave tube and an acoustic detector

AU Val'dov, A.N.; Gershtein, L.I.; Karyakin, E.N.; Krupnov, A.F.;

Maslovskii, A.V. (Sci.-Res. Radio-Phys. Inst., Gor'kii, USSR)

SO Instruments and Experimental Techniques (Sept.-Oct. 1974), vol.17, no.5, pt.1, p. 1373-5, 9 refs.

Translation of: Pribery i Tekhnika Eksperimenta (Sept.-Oct. 1974),

vol.17, no.5, pt.1, p. 110-12

AB The authors report on a) the elevation of the resolving power to the limiting value of  $2 \times 10^{-6}$  determined by the Doppler broadening of the lines; b) the elevation of the accuracy with which the frequencies of the spectral lines in the RAD acoustic detector are measured to  $2 \times 10^{-7}$ ; and c) achievement (for the first time) of recording of submillimeter spectra of gases having a high resolving power and accurate frequency markers in a continuous band having a width of up to 3 GHz at frequencies of up to 500 GHz ( $\lambda = 0.6$  mm)

L24 ANSWER 254 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 81:31371 CA

OREF 81:4995a,4998a

TI Millimeter wave spectrum of deuterofulminic acid. An example of current measurements in the frequency range 60 to 350 GHz

AU Winnewisser, Manfred; Winnewisser, Brenda P.

CS Inst. Phys. Chem., Univ. Kiel, Kiel, Fed. Rep. Ger.

SO Zeitschrift fuer Naturforschung, Teil A: Astrophysik, Physik und Physikalische Chemie (1974), 29(4), 633-40

AB An efficient system and method for on-line data acquisition and redn. for millimeter wave measurements with automatic absorption line center detn. is presented. The rotational transitions for the ground and 1st excited state of the bending modes V4 and V5 of DCNO are measured with the above system to be B0 10,292.48340(31), BV4 10,306.-00780(45), BV5 10,338.65942 (32) MHz; D0 3.5418(10), DV4 3.6409(22), and DV5 3.6208(16) kHz.

L24 ANSWER 258 OF 293 INSPEC (C) 2008 IET on STN

AN 1974:650404 INSPEC DN B1974-024320

TI Frequency markers providing resolution of 1 kHz for swept-microwave measurements

AU Hoefer, W.J.; Painchaud, G.R. (Univ. Ottawa, Ont., Canada)

SO Electronics Letters (18 April 1974), vol.10, no.8, p. 123-4, 3 refs.

AB Describes a method of generating high-precision frequency markers for swept-microwave measurements, using a spectrum analyser. Narrowband parameters, such as the Q factors of microwave cavities, can be measured with a resolution of 1 kHz

L24 ANSWER 262 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 76:52407 CA

OREF 76:8419a,8422a

TI Millimeter wave rotational spectrum of fulminic acid vibrationally excited states

AU Winnewisser, Manfred; Winnewisser, Brenda P.

CS Dep. Phys., Mississippi State Univ., State College, MS, USA

SO Journal of Molecular Spectroscopy (1972), 41(1), 143-76

AB A mm-wave spectrometer equipped with a free space cell and online computer averaging was employed to measure the absorption spectrum of H12C14N16O in the frequency range from 40 to 300 GHz. For each

rotational transition up to  $J=11 \rightarrow 12$ , all of the 1 components of transitions in the following vibrational states were obsd. and analyzed: 0000020,2, 0000031,3, 00020,200, and 000(11)0,2. The method of anal., carried out on the basis of the Nielsen-Amat formulation of the rotation-vibration interaction in linear mols., is discussed. The unperturbed rotational const.  $B_v$  and  $D_v$  as well as several vibration-rotation const. were detd. by using sum rules valid for each group of perturbed levels and lines. The vibrational anharmonicity const.  $g_{ltlt'}$  were detd. for the 1st time from pure rotational transitions. An interpretation of the results of the anal., esp. for the  $v_5=2$  and  $v_5=3$  states, is given. The obsd. anomalies indicate the presence of a potential function with a hump disturbing the isotropic 2-dimensional oscillator potential for  $v_5$ , the low-lying degenerate bending mode. In the case of the combination state 000(11)0,2 the vibrational l-type doubling const.  $r_{45}(0) = -0.81 \pm 1.00$  cm<sup>-1</sup> and  $r_{45}(1) = 0.6565 \pm 0.0027$  MHz were evaluated for the 1st time from mm-wave rotational transitions.

L24 ANSWER 266 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 74:118036 CA

OREF 74:19077a,19080a

TI On-line data aquisition and reduction system for millimeter and submillimeter wave spectroscopy

AU Winnewisser, Manfred

CS Inst. Phys. Chem., Univ. Kiel, Kiel, Fed. Rep. Ger.

SO Zeitschrift fuer Angewandte Physik (1971), 30(6), 359-70

LA German

AB On-line use of a small computer for signal averaging in conjunction with a video-type spectrometer is suitable for accurate measurements of spectra of unstable mol. species in the region 30-600 GHz, and for rapidly evaluating frequencies and assignments of transitions. Performance of the system is illustrated by measurements of the spectra of fulminic acid.

L24 ANSWER 276 OF 293 CA COPYRIGHT 2008 ACS on STN

AN 67:48835 CA

OREF 67:9151a,9154a

TI Measurement of the direct 1-doublet transitions in carbonyl sulfide

AU Maki, Arthur G.

CS Natl. Bur. of Stds., Washington, DC, USA

SO Journal of Molecular Spectroscopy (1967), 23(1), 110-11

AB The  $\Delta J = 0$  L-doublet transitions in the 01'0 vibrational state were measured for 16012C32S (carbonyl sulfide) and 16013C32S. The observed transition frequencies are tabulated along with deviations from the calcd. frequencies. Measurements were made at room temp. on the gas with a conventional Stark modulated microwave spectrometer. A digital memory oscilloscope was used as an integrating device. Calibration was achieved by frequency markers generated by an oscillator locked to the National Bureau of Standards standard frequency. The math. equations used in the calcns. are shown.

L24 ANSWER 288 OF 293 INSPEC (C) 2008 IET on STN

AN 1967:A16123 INSPEC DN 1967A16123  
TI A stark modulation microwave spectrograph  
AU Rajput, A.S.  
SO Bulletin of the National Institute of Sciences of India (1965), no. 30,  
p. 62-68 Conference: Symposium on Spectroscopy at Radio and Microwave  
Frequencies, Bombay, India, 4 Jan. 1964, - 5 Jan. 1964  
AB A recording type Stark Modulation Microwave Spectrograph has been set up  
along with a Frequency Standard which gives frequency markers up to 40  
kmc/s. The sensitivity of the spectrograph has been experimentally  
determined with the help of standard ammonia lines. It is found that the  
lines with intensity  $10^{-8}$  cm<sup>-1</sup> can be easily detected. A slow tuning  
motor is used to sweep the klystron mechanically and a H-B recorder is  
used for the recording of the lines. Stark splitting of standard ammonia  
lines has been used to determine the resolution which can be obtained.  
The resolution obtained is about 100 kc. Some new lines of formic acid  
(HCOOH) have been recorded and the assignment is being attempted.

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